

Canine Vaccinations

Vaccination recommendations have always been a simple part of animal care, but are now considered as complex and controversial. Historically, when any doubt existed regarding the need to vaccinate an animal, veterinary practitioners usually recommended revaccination. They strove to provide maximum protection for the animal, because the risks associated with vaccination were considered minimal compared with the threat of disease (Klingborg et al., 2002). However, in recent years the risks associated with vaccinations (revaccinations) have become apparent and questions have been asked about the need for revaccination.

Breeders Panel proposal:

The Breeders Panel proposed to the FBCSA Executive that the presentation of vaccination certificates of dogs older than 18 months will not be required anymore, while vaccination certificates of all dogs under the age of 18 months should still be presented at championship shows, breed surveys, companion dog competitions and endurance trials.

This proposal is based on scientific information showing that when puppies are vaccinated at 2 to 4 months of age and again at one year of age, they will have acquired memory cells and antibodies capable of providing protective immunity for many years, if not a lifetime. However, some data support recommendations for administering boosters of core vaccines at intervals of three years or longer in adult animals.

Background:

Vaccines have played a significant role in enabling people and animals to live longer and healthier lives in a world filled with pathogens. Vaccination is a potent medical procedure with both benefits and associated hazards. However, vaccine programs aim to provide optimal immunity against clinically relevant diseases the patient is at-risk to contract, while minimizing the potential for adverse events (Principles of Vaccination, AVMA, 2001). Schultz (1999) reported that, in the USA, it has been common practice since the development of canine vaccines in the late 1950's to administer them annually. The recommendation to vaccinate annually was based on the assumption that immunity would decrease in some dogs, thus to ensure immunity in the population, all dogs required revaccination. Little or no research has been done to demonstrate that the practice of annual revaccination has any scientific value in providing greater immunity than would be present if an animal was never revaccinated or was revaccinated at intervals longer than one year. In 1978, it was recommended that an ideal vaccination program would be one in which dogs and cats would be revaccinated at one year of age and then every third year thereafter (Schultz & Scott, 1978). That recommendation was based on a general knowledge of vaccinal immunity, especially the importance of immunologic memory and on duration of protection after natural sub clinical or clinical infections as well as on limited studies that were performed with certain canine and feline vaccines. Studies have shown that the duration of immunity for the four most important canine vaccines (core vaccines, i.e. vaccines considered as essential because they are

designed to prevent important diseases that pose serious health threats to susceptible dogs, irrespective of geographic location or the life style of a dog) is considerably longer than one year (Table 1). Furthermore, it was found that annual revaccination, with the vaccines that provide long term immunity, provides no demonstrable benefit and may increase the risk for adverse reactions. Adverse events may be associated with the antigen, adjuvant, carrier, preservative or a combination thereof. Possible adverse events include failure to immunize, anaphylaxis, immune-suppression, autoimmune disorders, transient infections, and/or long-term infected carrier states (Principles of Vaccination, AVMA, 2001).

Table 1: Duration of Immunity and Efficacy for Canine Vaccines Commercially Available in the United States (Schultz, 2000).

Vaccine	Minimum Duration of Immunity	Estimate of Relative Efficacy
Core		
Canine Distemper	= 7 yr 1	> 90%
Canine Parvovirus-2	= 7 yr 1	> 90%
Canine Adenovirus-2	= 7 yr 1	> 90%
Rabies virus	= 3 yr 1	> 85%
Non-Core		
Canine Coronavirus	"Lifetime" 3,5	-
Canine Parainfluenza	= 3 yr 1	> 80%
<i>Bordetella bronchiseptica</i>	= 1 yr 1,2	< 70%
<i>Leptospira canicola</i>	= 1 yr 2	= 50%
<i>Leptospira grippotyphosa</i>	= 1 yr 4	-
<i>Leptospira icterohaemorrhagiae</i>	= 1 yr 2	= 75%
<i>Leptospira pomona</i>	= 1 yr 4	-
<i>Borrelia burgdorferi</i>	= 1 yr 1	= 75%
<i>Giardia</i>	= 1 yr 4	-

1 Experimental challenge studies and/or serologic studies have been performed.

2 Based on field experience and observations from outbreak studies and clinical records.

3 Not available; cannot be determined. CCV has not been shown to cause significant disease.

4 Vaccines recently licensed; information not available except from company data.

Recommendations by AVMA and COBTA:

The American Veterinary Medical Association (AVMA), through the AVMA Council on Biological and Therapeutic Agents (COBTA) has undertaken a comprehensive review of cat and dog vaccination information. Important points in this report include (Klingborg et al., 2002):

- Vaccinations are an important part of preventive medical practices, which in turn are an important part of providing animals with optimal health care.
- Vaccination is a potent medical procedure associated with benefits and risks for animals. Knowledge of immunology and vaccinology is necessary to implement an effective individualized vaccination program.
- Individual animals will require different vaccines and vaccination programs.
- Revaccination recommendations should be designed to create and maintain clinically relevant immunity while minimizing adverse event potential. The practice of revaccinating animals annually is largely based on historic precedent supported by minimal scientific data. There is increasing evidence that some vaccines provide immunity beyond one year. Unnecessary stimulation of the immune system does not result in enhanced disease resistance and may expose animals to unnecessary risks.
- Veterinarians should consider creating a core vaccination program for most of the animals in their practice area. Core vaccines are defined as vaccines appropriate to provide protection in most animals against diseases that pose a risk to severe disease because the pathogens are virulent, highly infectious, and widely distributed in the region.

References:

The American Veterinary Medical Association (AVMA): Principals of Vaccination. 2001. (<http://www.avma.org/policies/vaccinations.htm>).

Klingborg, DJ, DR Husted, AE Curry-Galvin, NR Gumley, SC Henry, FT Bain, MA Paul, DM Boothe, KS Blood, DL Huxsoll, DL Reynolds, MG Rindell Jr, JS Reid and CR Short. 2002. AVMA Council on Biologic and Therapeutic Agents' Report on cat and dog vaccines. *Journal of the American Veterinary Medical Association*, 221, 1401 – 1407.

Schultz, RD. 1999. Duration of Immunity to Canine Vaccines: What We Know and Don't Know. In: *Canine Infectious Diseases: From Clinics to Molecular Pathogenesis*, Carmichael, L. (ed.), International Veterinary Information Service, Ithaca NY.

Schultz, RD. 2000. Considerations In Designing Effective And Safe Vaccination Programs For Dogs. In: *Recent Advances in Canine Infectious Diseases*, Carmichael L.E. (Ed.) Publisher: International Veterinary Information Service (www.ivis.org).

Schultz, RD and FW Scott. 1978. Canine & Feline Immunization. In: *Symposium on Practical Immunology*. R.D. Schultz (Ed.), Vet Clinics of N. Am., W.B. Saunders Co.